

What is claimed is:

1. A substrate heater assembly for supporting a substrate of a predetermined standardized diameter during processing, comprising:
 - a body having an upper surface and a lower surface;
 - a heating element embedded within the body;
 - a substrate support surface formed in the upper surface of the body and defining a portion of a substrate receiving pocket; and
 - an annular wall oriented perpendicular to the upper surface and having a length of at least one half a thickness of the substrate, the wall bounding an outer perimeter of the substrate receiving pocket and having a diameter less than about 0.5 mm greater than the predetermined substrate diameter.
2. The assembly of claim 1 further comprising:
 - a ring disposed in substrate receiving pocket, wherein the wall is at least a portion of an inner diameter of the ring.
3. The assembly of claim 2, wherein the ring further comprises:
 - a bevel flaring outward from the wall of the ring.
4. The assembly of claim 3, wherein the bevel is a continuous lip extending beyond the upper surface and circumscribing the wall.
5. The assembly of claim 3, wherein the bevel further comprises:
 - a plurality of discreet crowns extending beyond the upper surface and circumscribing the wall.
6. The assembly of claim 3, wherein the ring further comprises:
 - an annular flange radially outward of the wall.
7. The assembly of claim 6, wherein the flange further comprises:
 - a plurality of slots formed therein.

8. The assembly of claim 2, wherein the annular ring is formed from a ceramic material.

9. The assembly of claim 2, wherein the annular ring further comprises:
a height of about 0.7 to 7 mm; and
a ratio of the height to a width of the annular ring between about 0.05:1 and 0.5:1.

10. The assembly of claim 3, wherein the bevel tapers outward and upward at an angle of about 10 to 40 degrees.

11. The assembly of claim 4, wherein the lip further comprises:
a height of about 0.5 to 5 mm;
a ratio of the height to a width of the lip between about 0.3:1 and 3:1; and
an inner portion tapered outward and upward at an angle of about 10 to 40 degrees.

12. The assembly of claim 5, wherein at least one of the plurality of discreet crowns further comprises:
a height of about 0.5 to 5mm;
a ratio of the height to a width of the crown between about 0.3:1 and 3:1; and
an inner portion tapered outward and upward at an angle of about 10 to 40 degrees.

13. The assembly of claim 1 wherein the heater member is formed from a ceramic material.

14. The assembly of claim 1, wherein the wall is couples the upper surface to the substrate support surface of the body.

15. The assembly of claim 14, wherein the body further comprises:
a bevel flaring outward from the wall of the body.

16. The assembly of claim 15, wherein the bevel is a continuous lip extending beyond the upper surface and circumscribing the wall.

17. The assembly of claim 15, wherein the bevel further comprises:

a plurality of discreet crowns extending beyond the upper surface and circumscribing the wall.

18. The assembly of claim 15, wherein the bevel tapers outward and upward at an angle of about 10 to 40 degrees.

19. The assembly of claim 16, wherein the lip further comprises:

a height of about 0.5 to 5 mm;

a ratio of the height to a width of the lip between about 0.3:1 and 3:1; and

an inner portion tapered outward and upward at an angle of about 10 to 40 degrees.

20. The assembly of claim 17, wherein at least one of the plurality of discreet crowns further comprises:

a height of about 0.5 to 5mm;

a ratio of the height to a width of the crown between about 0.3:1 and 3:1; and

an inner portion tapered outward and upward at an angle of about 10 to 40 degrees.

21. An apparatus for processing a substrate of a predetermined standardized diameter, comprising:

a chemical vapor deposition chamber having a ceramic substrate heater assembly disposed therein, wherein the heater assembly comprises:

a body having an upper surface and a lower surface;

a heating element embedded within the body;

a substrate support surface formed in the upper surface of the body and defining a portion of a substrate receiving pocket; and

an annular wall oriented perpendicular to the upper surface and having a length of at least one half a thickness of the substrate, the wall bounding an outer perimeter of the substrate receiving pocket and having a diameter less

than about 0.5 mm greater than the predetermined substrate diameter.

22. An apparatus for processing a substrate of a predetermined standardized diameter, comprising:

a chemical vapor deposition chamber having a ceramic substrate heater assembly disposed therein, wherein the heater assembly comprises:

a body having an upper surface and a lower surface;

a heating element embedded within the body;

a substrate support surface formed in the upper surface of the body and defining a portion of a substrate receiving pocket;

an annular wall coupled between the substrate support surface and the upper surface, the wall having a length of at least one half a thickness of the substrate and a diameter less than about 0.5 mm greater than the predetermined substrate diameter; and

a plurality of crowns protruding from the upper surface, each of the crowns having an inner portion joined with the bevel.

23. The assembly of claim 22, wherein at least one of the plurality of discreet crowns further comprises:

a height of about 0.5 to 5mm;

a ratio of the height to a width of the crown between about 0.3:1 and 3:1; and

an orientation of the inner portion tapered outward and upward at an angle of about 10 to 40 degrees.